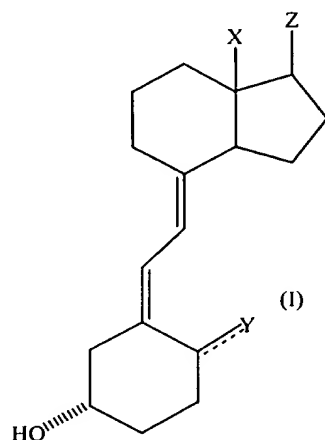


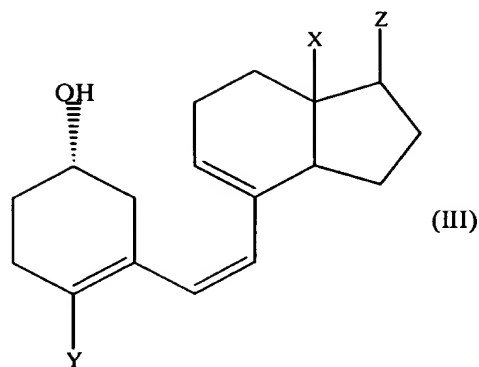
## **Listing of Claims**

1. Canceled
2. (Currently Amended) A method of achieving an effect in a patient comprising administering an effective amount of a vitamin D compound which is a 24-hydroxyvitamin D compound wherein the effect is treating ~~or preventing~~ bone loss or bone mineral content, hyperparathyroidism, hyperproliferation, or modulating the immune or inflammatory response, and wherein said 24-hydroxyvitamin D is a compound of formula (I):



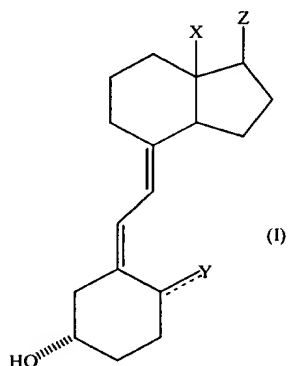
wherein Z represents a saturated or unsaturated, substituted or unsubstituted, straight-chain or branched C<sub>4</sub> - C<sub>18</sub> hydrocarbon group in which the C-24 or equivalent position is hydroxylated; Y is a methylene group if Y is double bonded to the A-ring or a methyl group or hydrogen if Y is single bonded; and X is hydrogen, lower alkyl or lower fluoroalkyl.

3. (Currently Amended) A method of achieving an effect in a patient comprising administering an effective amount of a vitamin D compound which is a 24-hydroxy~~previtamin~~ D, wherein the effect is treating ~~or preventing~~ bone loss or bone mineral content, hyperparathyroidism, hyperproliferation, or modulating the immune and inflammatory responses, wherein said 24-hydroxy~~previtamin~~ D is a compound of formula (III):

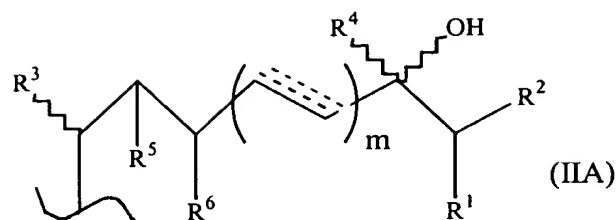


wherein Z represents a saturated or unsaturated, substituted or unsubstituted, straight-chain or branched  $C_4 - C_{18}$  hydrocarbon group in which the C-24 or equivalent position is hydroxylated; Y is a methyl group or hydrogen; and X is hydrogen, lower alkyl or lower fluoroalkyl.

4. (Previously Presented) The method of claim 14 wherein said 24-hydroxyvitamin D is a compound of formula (I):

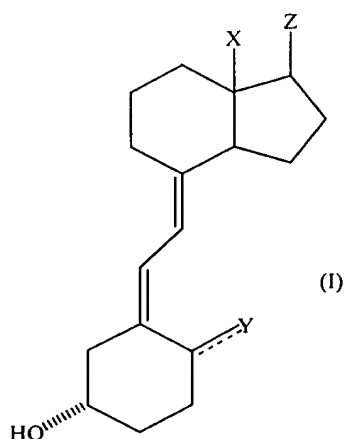


wherein Y is a methylene group if Y is double bonded to the A-ring or a methyl group or hydrogen if Y is single bonded; and X is hydrogen, lower alkyl or lower fluoroalkyl; and Z is a side chain of formula (IIA):

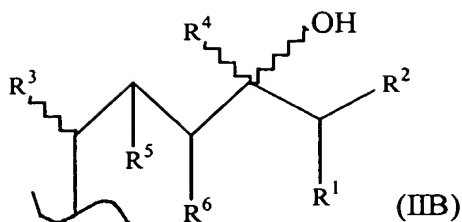


wherein a dotted line along the side chain represents an optional additional C-C bond and m is 0 or 1;  $R^1$  and  $R^2$  are independently lower alkyl, lower fluoroalkyl, lower alkenyl, lower fluoroalkenyl, lower cycloalkyl or, taken together with the carbon to which they are bonded, form a  $C_3$ - $C_8$  cyclohydrocarbon ring;  $R^3$  is hydrogen, lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl;  $R^4$  is lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; and  $R^5$  and  $R^6$  are each hydrogen or taken together form a double bond between C-22 and C-23.

5. (Previously Presented) The method of claim 14 wherein said 24-hydroxyvitamin D is a compound of formula (I):



wherein Y is a methylene group if Y is double bonded to the A-ring or a methyl group or hydrogen if Y is single bonded; and X is hydrogen, lower alkyl or lower fluoroalkyl; and Z is a side chain of formula (IIB):



wherein R<sup>5</sup> and R<sup>6</sup> are each hydrogen or taken together form a double bond between C-22 and C-23, R<sup>3</sup> is hydrogen, lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; R<sup>4</sup> is lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; and R<sup>1</sup> and R<sup>2</sup> are independently hydrogen, lower alkyl, lower fluoroalkyl, lower alkenyl, lower fluoroalkenyl, lower cycloalkyl or taken together with the carbon to which they are bonded form a C<sub>3</sub>-C<sub>8</sub> cyclocarbon ring.

6. (Original) The method of claim 5, wherein said 24-hydroxyvitamin D is 24-hydroxyvitamin D<sub>2</sub>; 24(S)-hydroxyvitamin D<sub>2</sub>; 24-hydroxyvitamin D<sub>4</sub>; 24(R)-hydroxyvitamin D<sub>4</sub>.

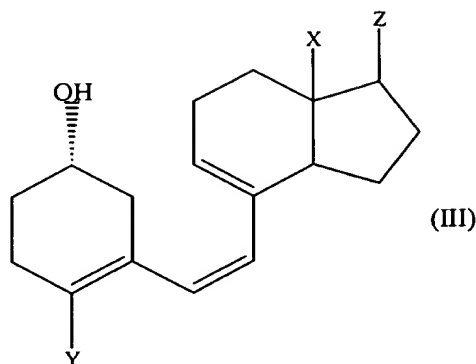
7-10. Canceled

11. (Currently Amended) A method of achieving an effect in a patient comprising administering an effective amount of a vitamin D compound which is a 24-hydroxyvitamin D wherein there is no hydroxyl group at the C1 position or a 24-hydroxyprevitamin D wherein there is no hydroxyl group at the C1 position, wherein the effect is increasing or maintaining bone mass or bone mineral content, lowering or maintaining lowered parathyroid hormone level, inhibiting hyperproliferative effects, inducing or enhancing cell differentiation or modulating inflammatory response.

12. Canceled

13. (Previously Presented) A method of achieving an effect in a patient comprising administering an effective amount of a vitamin D compound which is a 24-hydroxyprevitamin D wherein the effect is increasing or maintaining bone mass or bone mineral content, lowering or maintaining lowered parathyroid hormone level, inhibiting hyperproliferative effects, inducing or enhancing cell differentiation, modulating immune

response, or modulating inflammatory response, wherein said 24-hydroxy*previtamin* D is a compound of formula (III):

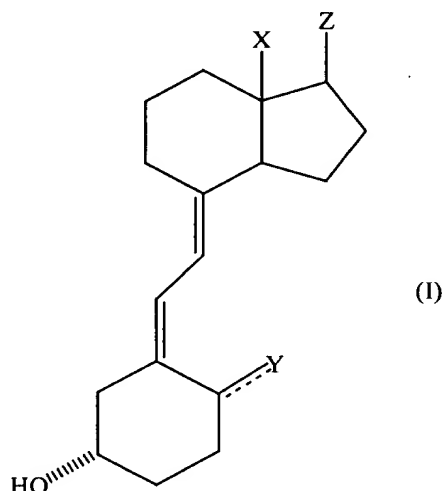


wherein Z represents a saturated or unsaturated, substituted or unsubstituted, straight-chain or branched C<sub>4</sub> - C<sub>18</sub> hydrocarbon group in which the C-24 or equivalent position is hydroxylated; Y is a methyl group or hydrogen; and X is hydrogen, lower alkyl or lower fluoroalkyl.

14. (Currently Amended) A method of treating a human to alleviate the pathological effects of osteoporosis, hyperparathyroidism, psoriasis, skin cancer, breast cancer, colon cancer, prostate cancer, prostatic hyperplasia, or inflammatory response imbalance, wherein the method comprises administering to the human a vitamin D compound which is a 24-hydroxyvitamin D wherein there is no hydroxyl group at the C1 position or a 24-hydroxy*previtamin* D wherein there is no hydroxyl group at the C1 position, wherein said compound is administered to the human in an amount sufficient to increase or maintain bone mass or bone mineral content, lower or maintain lowered parathyroid hormone level, inhibit hyperproliferative effects, induce or enhance cell differentiation, or modulate inflammatory response in the human.

15. (Withdrawn) A pharmaceutical composition comprising an effective amount of a substantially pure, synthesized 24-hydroxyvitamin D or a 24-hydroxy*previtamin* D and a pharmaceutically acceptable carrier, adjuvant or vehicle.

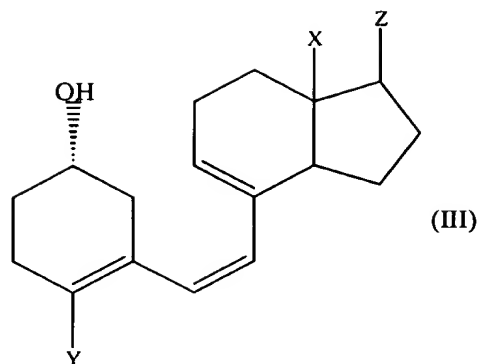
16. (Withdrawn) The composition of claim 15, wherein the composition is orally administrable.
17. (Previously Presented) The method of claim 2, wherein said 24-hydroxyvitamin D compound is administered in a dosage of about 3.5  $\mu\text{g}$  to about 1000  $\mu\text{g}/\text{week}$ .
18. (Withdrawn) The composition of claim 15 wherein the composition is further combined with a bone agent, a cytotoxic agent, an immune response regulating agent, an antiinflammatory agent or combinations thereof.
19. (Withdrawn) A 24-hydroxyvitamin D compound which is a compound of formula (I):



wherein Z represents a saturated or unsaturated, substituted or unsubstituted, straight-chain or branched  $\text{C}_4 - \text{C}_{18}$  hydrocarbon group in which the C-24 or equivalent position is hydroxylated; Y is a methylene group if Y is double bonded to the A-ring or a methyl group or hydrogen if Y

is single bonded provided that the compound of formula (I) is not 24-hydroxyvitamin  $\text{D}_2$ ; and X is hydrogen, lower alkyl or lower fluoroalkyl provided that the compound of formula (I) is not 24-hydroxyvitamin  $\text{D}_2$ .

20. (Withdrawn) A 24-hydroxyvitamin D which is a compound of formula (III):



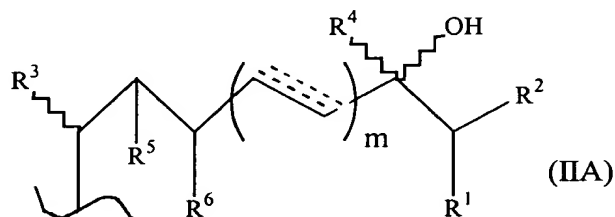
wherein Z represents a saturated or unsaturated, substituted or unsubstituted, straight-chain or branched C<sub>4</sub>-C<sub>18</sub> hydrocarbon group in which the C<sub>24</sub> or equivalent position is hydroxylated; Y is methyl group or hydrogen; and X is hydrogen, lower alkyl or lower fluoroalkyl.

21-24. Canceled

25. (Withdrawn) As an article of manufacture, a tablet having a relatively high absorption rate for vitamin D as measured by blood level of vitamin D over time after ingestion, comprising a vitamin D compound which is 24-hydroxyvitamin D or 24-hydroxyprevitamin D and a pharmaceutically acceptable carrier, adjuvant or vehicle.

26-27. Canceled

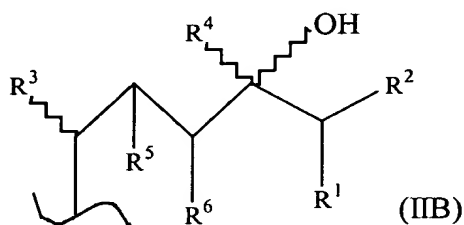
28. (Previously Presented) The method of claim 3 wherein Z is a side chain of formula (IIA):



wherein a dotted line along the side chain represents an optional additional C-C bond and m is 0 or 1; R<sup>1</sup> and R<sup>2</sup> are independently lower alkyl, lower fluoroalkyl, lower alkenyl, lower

fluoroalkenyl, lower cycloalkyl or, taken together with the carbon to which they are bonded, form a C<sub>3</sub>-C<sub>8</sub> cyclohydrocarbon ring; R<sup>3</sup> is hydrogen, lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; R<sup>4</sup> is lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; and R<sup>5</sup> and R<sup>6</sup> are each hydrogen or taken together form a double bond between C-22 and C-23.

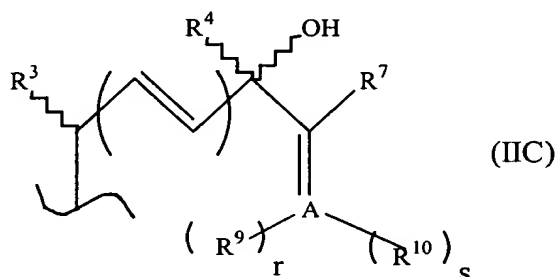
29. (Previously Presented) The method of claim 3 wherein Z is a side chain of formula (IIB):



wherein R<sup>5</sup> and R<sup>6</sup> are each hydrogen or taken together form a double bond between C-22 and C-23, R<sup>3</sup> is hydrogen, lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; R<sup>4</sup> is lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; and R<sup>1</sup> and R<sup>2</sup> are independently hydrogen, lower alkyl, lower fluoroalkyl, lower alkenyl, lower fluoroalkenyl, lower cycloalkyl or taken together with the carbon to which they are bonded form a C<sub>3</sub>-C<sub>8</sub> cyclocarbon ring.

30. (Previously Presented) The method of claim 29, wherein said 24-hydroxyprevitamin D is 24-hydroxyprevitamin D<sub>2</sub>; 24(S)-hydroxyprevitamin D<sub>2</sub>; 24-hydroxyprevitamin D<sub>4</sub>; or 24(R)-hydroxyprevitamin D<sub>4</sub>.

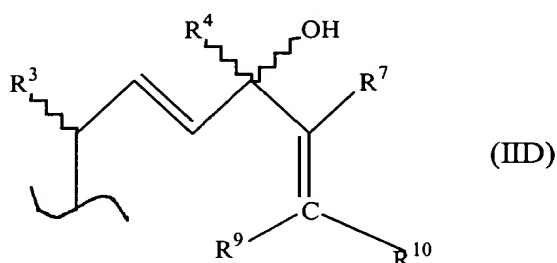
31. (Previously Presented) The method of claim 3 wherein Z is a side chain of formula (IIC):





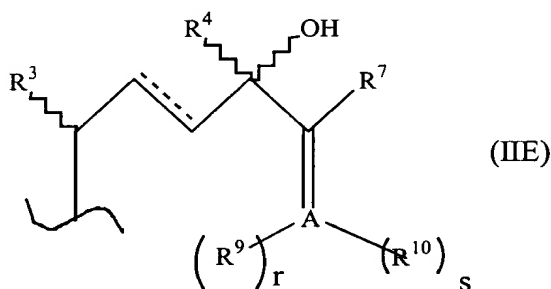
wherein n is an integer which is 1 or 2;  $R^3$  is hydrogen, lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl;  $R^4$  and  $R^7$  are independently lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; A is carbon, oxygen, sulfur or nitrogen; r is 1 and s is zero when A is nitrogen; r and s are 1 when A is carbon; r and s are zero when A is sulfur or oxygen; and when A is carbon,  $R^9$  and  $R^{10}$  are independently hydrogen, lower alkyl, lower alkenyl, lower fluoroalkyl or lower fluoroalkenyl.

32. (Previously Presented) The method of claim 3 wherein Z is a side chain of formula (IID):



wherein  $R^3$ ,  $R^9$  and  $R^{10}$  are independently hydrogen, lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; and  $R^4$  and  $R^7$  are independently lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl.

33. (Previously Presented) The method of claim 3 wherein Z is a side chain of formula (IIE):



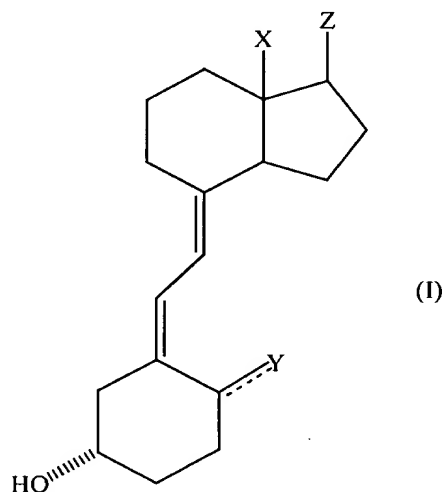
wherein a dotted line along the side chain represents an optional additional C-C bond; q is zero or an integer which is 1 or 2;  $R^3$  is hydrogen, lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl;  $R^4$  and  $R^7$  are independently lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; A is carbon, oxygen, sulfur or nitrogen; r is 1 and s is

zero when A is nitrogen; r and s are 1 when A is carbon; r and s are zero when A is sulfur or oxygen;  $R^9$  and  $R^{10}$  are independently hydrogen, lower alkyl, lower alkenyl, lower fluoroalkyl or lower fluoroalkenyl.

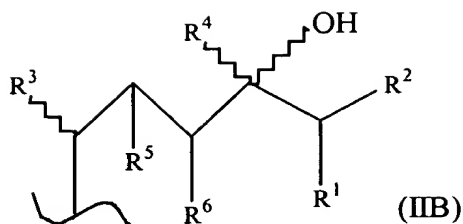
34. (Previously Presented) The method of claim 33 wherein said 24-hydroxyprevitamin D compound is 24-OH-25-ene-*preD*<sub>2</sub>; and or 24-OH-25-oxo-*preD*<sub>2</sub>.

35. (Currently Amended) The method of claim 2, wherein effect is treating ~~or preventing~~ bone loss or bone mineral content, or hyperproliferation.

36. (Withdrawn) The composition of claim 15, wherein said 24-hydroxyvitamin D is a vitamin D<sub>2</sub> compound of formula (I):

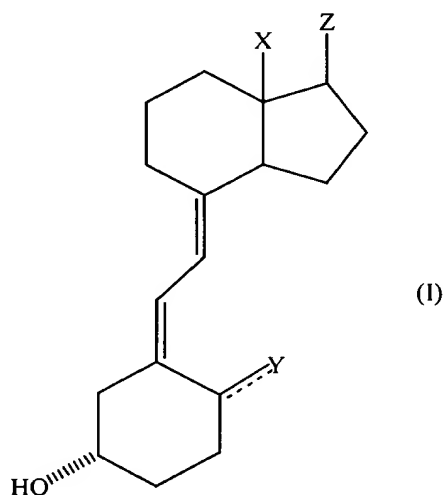


wherein Y is a methylene group if Y is double bonded to the A-ring or a methyl group or hydrogen if Y is single bonded; and X is hydrogen, lower alkyl or lower fluoroalkyl; and wherein Z is a sidechain of formula (IIB):

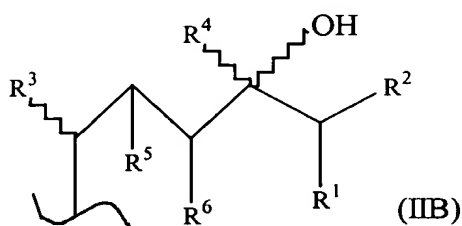


wherein R<sup>5</sup> and R<sup>6</sup> are each hydrogen or taken together form a double bond between C-22 and C-23, R<sup>3</sup> is hydrogen, lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; R<sup>4</sup> is lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; and wherein R<sup>1</sup> is a methyl group, and wherein R<sup>2</sup> is a methyl group.

37. (Withdrawn) The tablet of claim 25, wherein the vitamin D compound is a vitamin D<sub>2</sub> compound of formula (I):



wherein Y is a methylene group if Y is double bonded to the A-ring or a methyl group or hydrogen if Y is single bonded; and X is hydrogen; and wherein Z is a sidechain of formula (IIB):



wherein R<sup>5</sup> and R<sup>6</sup> are each hydrogen or taken together form a double bond between C-22 and C-23, R<sup>3</sup> is hydrogen, lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; R<sup>4</sup> is lower alkyl, lower fluoroalkyl, lower alkenyl or lower fluoroalkenyl; and wherein R<sup>1</sup> is a methyl group, and wherein R<sup>2</sup> is a methyl group.

38. (Currently Amended) The method of claim 2, wherein the effect is treating or preventing bone loss.

39. (Currently Amended) The method of claim 2, wherein the effect is treating or preventing hyperparathyroidism.

40. (Currently Amended) The method of claim 2, wherein the effect is treating or preventing hyperproliferation.

41. (Previously Presented) The method of claim 2, wherein the effect is modulating an immune response.

42. (Previously Presented) The method of claim 2, wherein the effect is modulating an inflammatory response.

43. (Previously Presented) The method of claim 2, wherein the vitamin D compound is 24-hydroxy-19-nor-vitamin D.

44. (Previously Presented) The method of claim 2, wherein the vitamin D compound is 24-hydroxyvitamin D<sub>2</sub>.

45. (Currently Amended) The method of claim 3, wherein the effect is treating or preventing bone loss.

46. (Currently Amended) The method of claim 3, wherein the effect is treating or preventing hyperparathyroidism.

47. (Currently Amended) The method of claim 3, wherein the effect is treating or preventing hyperproliferation.
48. (Previously Presented) The method of claim 3, wherein the effect is modulating an immune response.
49. (Previously Presented) The method of claim 3, wherein the effect is modulating an inflammatory response.
50. (Previously Presented) The method of claim 3, wherein the vitamin D compound is 24-hydroxy-19-nor-vitamin D.
51. (Previously Presented) The method of claim 3, wherein the vitamin D compound is 24-hydroxyvitamin D<sub>2</sub>.
52. (Previously Presented) The method of claim 11 wherein the effect is increasing or maintaining bone mass.
53. (Previously Presented) The method of claim 11 wherein the effect is increasing or maintaining bone mineral content.
54. (Previously Presented) The method of claim 11 wherein the effect is lowering or maintaining lowered parathyroid hormone level.
55. (Previously Presented) The method of claim 11 wherein the effect is inhibiting hyperproliferative effects.
56. (Previously Presented) The method of claim 11 wherein the effect is inducing or enhancing cell differentiation.
57. (Previously Presented) The method of claim 11 wherein the effect is modulating an inflammatory response.

58. (Previously Presented) The method of claim 11, wherein the vitamin D compound is 24-hydroxy-19-nor-vitamin D.
59. (Previously Presented) The method of claim 11, wherein the vitamin D compound is 24-hydroxyvitamin D<sub>2</sub>.
60. (Previously Presented) The method of claim 13 wherein the effect is increasing or maintaining bone mass.
61. (Previously Presented) The method of claim 13 wherein the effect is increasing or maintaining bone mineral content.
62. (Previously Presented) The method of claim 13 wherein the effect is lowering or maintaining lowered parathyroid hormone level.
63. (Previously Presented) The method of claim 13 wherein the effect is inhibiting hyperproliferative effects.
64. (Previously Presented) The method of claim 13 wherein the effect is inducing or enhancing cell differentiation.
65. (Previously Presented) The method of claim 13 wherein the effect is modulating an immune response.
66. (Previously Presented) The method of claim 13 wherein the effect is modulating an inflammatory response.
67. (Previously Presented) The method of claim 13, wherein the vitamin D compound is 24-hydroxy-19-nor-vitamin D.
68. (Previously Presented) The method of claim 13, wherein the vitamin D compound is 24-hydroxyvitamin D<sub>2</sub>.

69. (Previously Presented) The method of claim 14 wherein the method of treatment alleviates the pathological effects of osteoporosis.
70. (Previously Presented) The method of claim 14 wherein the method of treatment alleviates the pathological effects of hyperparathyroidism.
71. (Previously Presented) The method of claim 14 wherein the method of treatment alleviates the pathological effects of psoriasis.
72. (Previously Presented) The method of claim 14 wherein the method of treatment alleviates the pathological effects of skin cancer.
73. (Previously Presented) The method of claim 14 wherein the method of treatment alleviates the pathological effects of breast cancer.
74. (Previously Presented) The method of claim 14 wherein the method of treatment alleviates the pathological effects of colon cancer.
75. (Previously Presented) The method of claim 14 wherein the method of treatment alleviates the pathological effects of prostate cancer.
76. (Previously Presented) The method of claim 14 wherein the method of treatment alleviates the pathological effects of prostatic hyperplasia.
77. (Previously Presented) The method of claim 14 wherein the method of treatment alleviates the pathological effects of inflammatory response imbalance.
78. (Previously Presented) The method of claim 14 wherein the vitamin D compound is administered to the human in an amount sufficient to increase or maintain bone mass.
79. (Previously Presented) The method of claim 14 wherein the vitamin D compound is administered to the human in an amount sufficient to increase or maintain bone mineral content.

80. (Previously Presented) The method of claim 14 wherein the vitamin D compound is administered to the human in an amount sufficient to lower or maintain lowered parathyroid hormone level.

81. (Previously Presented) The method of claim 14 wherein the vitamin D compound is administered to the human in an amount sufficient to inhibit hyperproliferative effects.

82. (Previously Presented) The method of claim 14 wherein the vitamin D compound is administered to the human in an amount sufficient to induce cell differentiation.

83. (Previously Presented) The method of claim 14 wherein the vitamin D compound is administered to the human in an amount sufficient to enhance cell differentiation.

84. (Previously Presented) The method of claim 14 wherein the vitamin D compound is administered to the human in an amount sufficient to modulate inflammatory response in the human.

85. (Previously Presented) The method of claim 14, wherein the vitamin D compound is 24-hydroxy-19-nor-vitamin D.

86. (Previously Presented) The method of claim 14, wherein the vitamin D compound is 24-hydroxyvitamin D<sub>2</sub>.